



United States Environmental Protection Agency  
Laboratory Services and Applied Science Division  
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Laboratory Report

March 10, 2020

Dan Burgo - Mail Code 02-2  
US EPA New England R1

Project Number: 20030005  
Project: Former Cass Toy Co. - Athol, MA  
Analysis: Field Analysis of Metals by XRF  
EPA Chemist: Scott Clifford

Date Samples Received by the Laboratory: 03/09/2020

Analytical Procedure:

All samples were received and logged in by the laboratory according to the USEPA New England Laboratory SOP for Sample Log-in.

The sample preparation and analysis SOP used was one of the following: FLDXRFOLYMPUS, or FLDXRFNITON5, or FLDXRF-0.SOP

Samples were analyzed using one of the following:

Niton XL3t 600 x-ray fluorescence (XRF) instrument equipped with a 50 kV X-ray tube and a high resolution Si pin detector.

Olympus Delta DP 4050 x-ray fluorescence (XRF) instrument equipped with a 50 kV X-ray tube and a high resolution silicon drift detector.

Innovex Alpha 4000 x-ray fluorescence (XRF) instrument equipped with a 40 kV X-ray tube and a high resolution Si pin detector.

Data were reviewed in accordance with the internal verification procedures described in the EPA New England Quality Manual for NERL.

Results relate only to the items tested or to the samples as received by the Laboratory. This analytical report shall not be reproduced except in full, without written approval of the laboratory.

If you have any questions please call me at 617-918-8340 .

Sincerely,

20030005\$FXRF

**Qualifiers:**

**RL** = Reporting limit

**ND** = Not Detected above Reporting limit

**NA** = Not Applicable due to high sample dilutions or sample interferences

**NC** = Not calculated since analyte concentration is ND.

**J** = Estimated value

**J1** = Estimated value due to MS recovery outside acceptance criteria

**J2** = Estimated value due to LFB result outside acceptance criteria

**J3** = Estimated value due to RPD result outside acceptance criteria

**J4** = Estimated value due to LCS result outside acceptance criteria

**E** = Estimated value exceeds the calibration range

**L** = Estimated value is below the calibration range

**B** = Analyte is associated with the lab blank or trip blank contamination. Values are qualified when the observed concentration of the contamination in the sample extract is less than 10 times the concentration in the blank.

**R** = No recovery was calculated since the analyte concentration is greater than four times the spike level.

**P** = The confirmation value exceeded 35% difference and is less than 100%. The lower value is reported.

**C** = The identification has been confirmed by GC/MS.

**A** = Suspected Aldol condensation product.

**N** = Tentatively identified compound.

**Former Cass Toy Co. - Athol, MA**

**Field Analysis of Metals by XRF**

Client Sample ID:	SS-01	Lab Sample ID:	AB85590
Date of Collection:	3/06/2020	Matrix:	Soil
Date of Preparation:	3/06/2020	Amount Prepared:	N/A
Date of Analysis:	3/06/2020	Percent Solids:	N/A
Dry Weight Prepared:	N/A	Extract Dilution:	N/A
Wet Weight Prepared:	N/A	pH:	N/A
Volume Extracted:	N/A	GPC Factor:	N/A
Final Volume:	N/A		

<b>CAS Number</b>	<b>Compound</b>	<b>Concentration mg/Kg</b>	<b>RL mg/Kg</b>	<b>Qualifier</b>
7440-50-8	Copper	21	21	
7440-66-6	Zinc	50	30	
7440-47-3	Chromium	45	40	
7439-92-1	Lead	46	10	
7440-38-2	Arsenic	ND	6.0	
7440-22-4	Silver	ND	5.0	
7440-43-9	Cadmium	ND	7.0	
7439-97-6	Mercury	ND	5.0	
7782-49-2	Selenium	ND	3.0	
7740-39-3	Barium	490	150	

**Former Cass Toy Co. - Athol, MA**

**Field Analysis of Metals by XRF**

Client Sample ID:	SS-02	Lab Sample ID:	AB85591
Date of Collection:	3/06/2020	Matrix:	Soil
Date of Preparation:	3/06/2020	Amount Prepared:	N/A
Date of Analysis:	3/06/2020	Percent Solids:	N/A
Dry Weight Prepared:	N/A	Extract Dilution:	N/A
Wet Weight Prepared:	N/A	pH:	N/A
Volume Extracted:	N/A	GPC Factor:	N/A
Final Volume:	N/A		

<b>CAS Number</b>	<b>Compound</b>	<b>Concentration mg/Kg</b>	<b>RL mg/Kg</b>	<b>Qualifier</b>
7440-50-8	Copper	190	25	
7440-66-6	Zinc	830	30	
7440-47-3	Chromium	55	40	
7439-92-1	Lead	470	10	
7440-38-2	Arsenic	ND	16	
7440-22-4	Silver	ND	4.0	
7440-43-9	Cadmium	ND	6.0	
7439-97-6	Mercury	ND	5.0	
7782-49-2	Selenium	ND	3.0	
7740-39-3	Barium	440	150	

**Former Cass Toy Co. - Athol, MA**

**Field Analysis of Metals by XRF**

Client Sample ID:	SS-02 Lab Dup	Lab Sample ID:	AB85592
Date of Collection:	3/06/2020	Matrix:	Soil
Date of Preparation:	3/06/2020	Amount Prepared:	N/A
Date of Analysis:	3/06/2020	Percent Solids:	N/A
Dry Weight Prepared:	N/A	Extract Dilution:	N/A
Wet Weight Prepared:	N/A	pH:	N/A
Volume Extracted:	N/A	GPC Factor:	N/A
Final Volume:	N/A		

<b>CAS Number</b>	<b>Compound</b>	<b>Concentration mg/Kg</b>	<b>RL mg/Kg</b>	<b>Qualifier</b>
7440-50-8	Copper	220	25	
7440-66-6	Zinc	1100	30	
7440-47-3	Chromium	66	40	
7439-92-1	Lead	460	10	
7440-38-2	Arsenic	31	3.0	
7440-22-4	Silver	ND	4.0	
7440-43-9	Cadmium	ND	6.0	
7439-97-6	Mercury	ND	5.0	
7782-49-2	Selenium	ND	3.0	
7740-39-3	Barium	300	150	

**Former Cass Toy Co. - Athol, MA**

**Field Analysis of Metals by XRF**

Client Sample ID:	SS-102	Lab Sample ID:	AB85593
Date of Collection:	3/06/2020	Matrix:	Soil
Date of Preparation:	3/06/2020	Amount Prepared:	N/A
Date of Analysis:	3/06/2020	Percent Solids:	N/A
Dry Weight Prepared:	N/A	Extract Dilution:	N/A
Wet Weight Prepared:	N/A	pH:	N/A
Volume Extracted:	N/A	GPC Factor:	N/A
Final Volume:	N/A		

<b>CAS Number</b>	<b>Compound</b>	<b>Concentration mg/Kg</b>	<b>RL mg/Kg</b>	<b>Qualifier</b>
7440-50-8	Copper	180	25	
7440-66-6	Zinc	1300	30	
7440-47-3	Chromium	63	40	
7439-92-1	Lead	400	10	
7440-38-2	Arsenic	ND	15	
7440-22-4	Silver	ND	4.0	
7440-43-9	Cadmium	ND	6.0	
7439-97-6	Mercury	ND	5.0	
7782-49-2	Selenium	ND	3.0	
7740-39-3	Barium	350	150	